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ABSTRACT

This family activity book provides information for discovering and demonstrating the science of fire--how firefighters decide which fires to let burn and which to put out, how fires start and spread, and what to do when they flare up. Chapters include: (1) "A Game about Wildfire"; (2) "Create a Fire Safety Commercial"; (3) "Make a Fire Escape Plan"; (4) "Resources"; (5) "Score Charts, Questions, and Answers"; and (6) "Gamepieces." (YDS)

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WILDFIRE

A Family Activity Book

NOVA Science, Fun, and Facts based on *Fire Wars*, a NOVA special

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

WILDFIRE

A Family Activity Book

NOVA Science, Fun, and Facts based on *Fire Wars*, a NOVA special

Dear Families,

The National Science Foundation is proud to be a major supporter of *Fire Wars*, the two-hour NOVA special that examines wildfire in America.

Our natural landscapes have always been an inspiring part of our national heritage. In recent decades the science of ecology has also shown us how complex these landscapes are. To many, this NOVA program will provide surprising information about fire's critical role in maintaining healthy wildlands, demonstrating how fire suppression can be as ecologically harmful as the most destructive conflagration. This understanding can help us manage our magnificent forests and prairies, ensuring that these natural treasures endure for the enjoyment of future generations.

The *Fire Wars* program is a rich mixture of hard science and warm human stories. It looks at fire as a chemical process and explores the development and use of new technologies for fire prevention and firefighter safety. It underlines the role of weather in determining firefighting strategy and the impact of wildfire on natural ecosystems. It examines the historical evolution of our understanding of fire on the landscape and the tough choices that we face in managing fires today. And it honors the heroic efforts of the men and women who work to save lives, property, and our threatened wilderness.

We invite your family to have fun as you explore the science related to our understanding of fire in America. Fire up your imagination with the *Fire Wars* program and the Sparks game and activities in this book for a deeper appreciation of fire—an awe-inspiring force of nature.

Hyman Field
Senior Advisory for Public Understanding of Research
National Science Foundation

Fire Wars

Airs May 7, 2002, on PBS

Swirling tornadoes of flames. Hundreds of homes destroyed. Millions of acres burned. Fire season.

These are the obvious images of wildfire: armies of firefighters struggling

every year to save threatened forests and communities from uncontrollable flames. But there's another side to fire as well–as one of the key elements in healthy ecosystems, necessary and revitalizing. *Fire Wars*, a two-hour special, follows the Arrowhead Hotshots, an elite fire crew, as they fight their way through an entire fire season. NOVA is with them on the front lines to tell the complex story of America's war on wildfire.

See page 12 for information on ordering the *Fire Wars* video.

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HOW TO USE

Whether it's a majestic grove of giant sequoias or the marshy swamps of the Everglades, the natural landscapes of America have been shaped by wildfire. But for most of the last century, these fires were seen as the enemy, too dangerous and destructive to be left to burn. People spent millions of dollars trying to put out all wilderness fires. Today, land managers and ecologists realize that the policy of total fire suppression has failed, and it has left a dangerous legacy: forest conditions that support more catastrophic fires than ever before.

Play the Sparks game in this activity book to find out how firefighters and rangers decide which fires to let burn, and which to put out. Learn how fires start and spread, and what to do when they flare up. Discover fire's role in creating healthy forests and how it affects plants and trees, animals, and even humans. Then, "lights, camera, action." Try your hand at making a commercial about fire safety. Pick your topic, write your lines, and act it out for your family and friends. Finally, look at your own safety: Does your family have a fire escape plan for your home? Learn how to make one on page 10.

But, most of all, have lots of fun learning about fire.

SPARKS

A GAME ABOUT WILDFIRE

Players: 1 to 8
Ages: 8 and up
Playing time: 45 minutes

Wildfires are part of the natural ecology around the world. Over time, the repeated cycles of plant growth, fire, fire's aftermath, and plant regrowth create healthy wildlands. Although lightning starts fires, humans are more often the cause. The National Park Service and other fire management agencies are always learning new and better ways to manage public lands. This might mean putting out a fire when it occurs near a populated area and creates a danger to people or property. It might also mean letting a fire burn, or even setting a controlled fire to help some plants sprout and revitalize wildlands, or remove organic buildup that might fuel a fire.
Here is your chance to see how you would respond to unpredictable fire situations.

steps done by Game Master GM

steps done by Rangers R

OBJECTIVE

You will set up a forest landscape and manage fires caused by lightning and humans. Your goals (and the way you score points) are to:

- put out fires that endanger homes and campsites
- keep the forest clear of fuel buildup by letting "safe" fires burn
- match bonus questions and answers at the end of game

WHAT YOU NEED

bath towel
gamepieces
pencil
Questions and Answers sheet
scissors
Score Charts
tape
1 or 2 tee shirts (or other small articles of clothing)

Note: *Score Charts, Questions and Answers sheet and gamepieces are at the back of the book.*

GET READY TO PLAY

1 Choose a Game Master

Select a player to become the Game Master (GM). All other players will be Rangers (R). The GM's job is to guide the Rangers step-by-step through the game. The GM reads the game directions to the Rangers, gives advice, interprets rules, and decides how directions will be carried out and disagreements settled. Rangers can try to persuade the GM in their favor but, in the end, the GM's decision is final. If you are playing alone you can be both the GM and the Ranger.

2 Review Game GM

Review the game objective above with the Rangers. Quickly, review Key Game Terms on page 4. Then show them the Sample Gamepiece art on page 5, and point out the following:

- House and Tree gamepieces have 4 sides. For example:
  Tree
  Burning Tree
  Charred (burnt) Stump
  Regrowth
- Fire Starters are both human and lightning. The number tells the number of items to burn on the game landscape.

- Rivers (blue strips) have Fire Breaks (brown strips) on other side
- Careful Campsites put out the camp fire. Careless Campsites left the fire burning

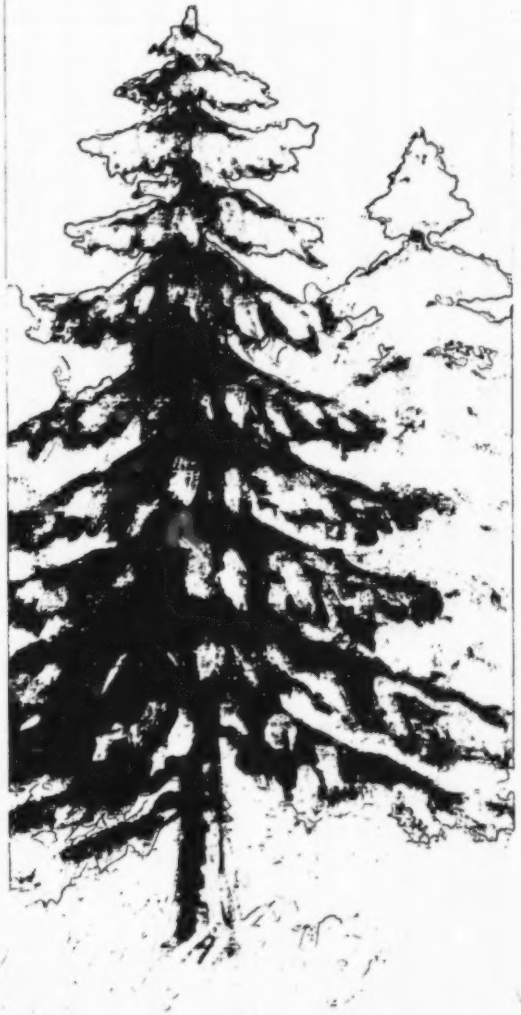
3 Make Gamepieces GM

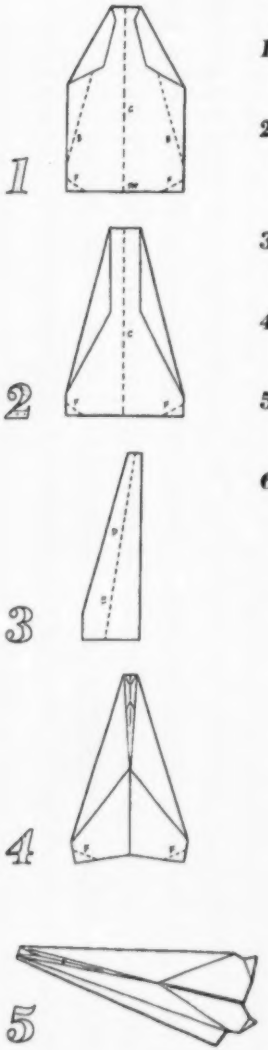
Read the directions for making the gamepieces to the Rangers. While the Rangers are removing and folding the gamepieces, the GM silently reads the rest of the game instructions.

Directions for Making Gamepieces:

- Carefully tear the gamepieces from the back of the book. The pages are perforated to make it easy.
- **Carefully** tear the gamepieces apart along the perforated lines marked "tear here."
- Fold the Trees and Houses in half along the fold lines so that the unburned and burning sides are on the outside of the gamepiece.

- Crease the fold on the gamepieces with your fingers so they lie flat.
- Fold the Airplane as shown on this page.





Directions for Folding Airplane:

1 With the Top side up, fold "A" along lines toward center.

2 Fold "B" along lines toward center. (This fold will overlap A, but that's okay.)

3 Fold plane in half (inward) along line "C".

4 Fold along lines "E" toward center fold. Open wings of plane.

5 Fold corners up along line "F" on both wings.

6 Place tape across center at the top.

KEY GAME TERMS

4 Create the Landscape GM

Read the following directions to the Rangers and have them set up the landscape. (You may want to show them the Landscape Example below.) Tell them they can discuss what landscape would keep property safe and wildfires from spreading.

Directions for Setting Up the Landscape:

- Fold the towel in half so that it is more square than long.
- Put rolled-up tee shirts under the towel to create a hilly landscape.
- Place the Lake on the landscape.
- Add some Rivers (blue side), but save some Fire Breaks (brown side) to use later in the game.
- Place the Trees on the landscape.
- Place the Houses on the landscape.
- Shuffle the Campsites tent-side up and place them tent-side up in the landscape.
- Shuffle the Fire Starters number-side down and place them beside the landscape.

Burn Rate

The number on the Fire Starter indicates how many Trees, Houses, and/or Campsites to burn.

Fire Break

An area that has been cleared of vegetation in order to stop a fire.

Fire Season

The time during the year when weather and climate conditions make wildfires more likely to happen. In the game, when all four Fire Starters are played, the fire season is almost over. The game continues until all fires are out.

Fuel

Underbrush, trees, plants, dead branches, and other organic materials that build up over time and feed fires.

Prescribed Burn

A controlled fire set by park rangers as a land management strategy. It helps remove fuel buildup by creating a burned area that reduces the spread of fire and helps certain types of plants that need fire to grow.

Regrowth

Regrowth is the new plant life that grows in a burned area. In the game, regrowth occurs during scoring. You turn a Charred Stump or Charred House into regrowth by folding the gamepiece to the side with sprouting plants or trees growing out of the house foundation.

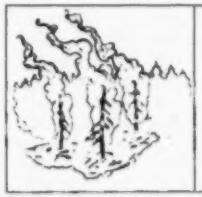
Landscape Example:
A lightning bolt has struck and the fire is moving in the wind direction.

SAMPLE GAMEPIECES

36 Tree Gamepieces

Tree

Burning Tree



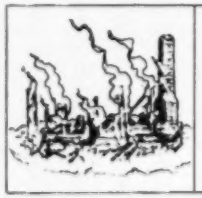
Charred (burnt) Stump

Regrowth

6 House Gamepieces

House

Burning House



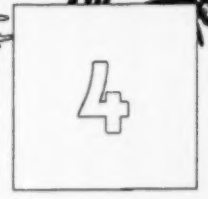
Charred (burnt) House

Regrowth

Fire Starters

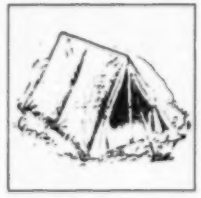
2 Lightning Bolts

2 People

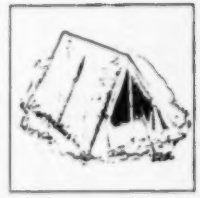


Campsites

3 Careless Campsites

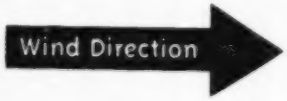


2 Careful Campsites

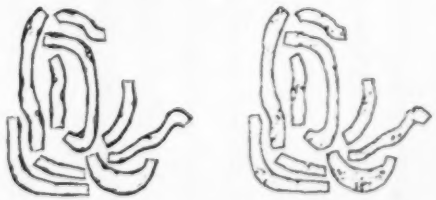


8

1 Wind Arrow



9 Fire Breaks and/or Rivers



1 Lake

1 Airplane

PLAYING THE GAME

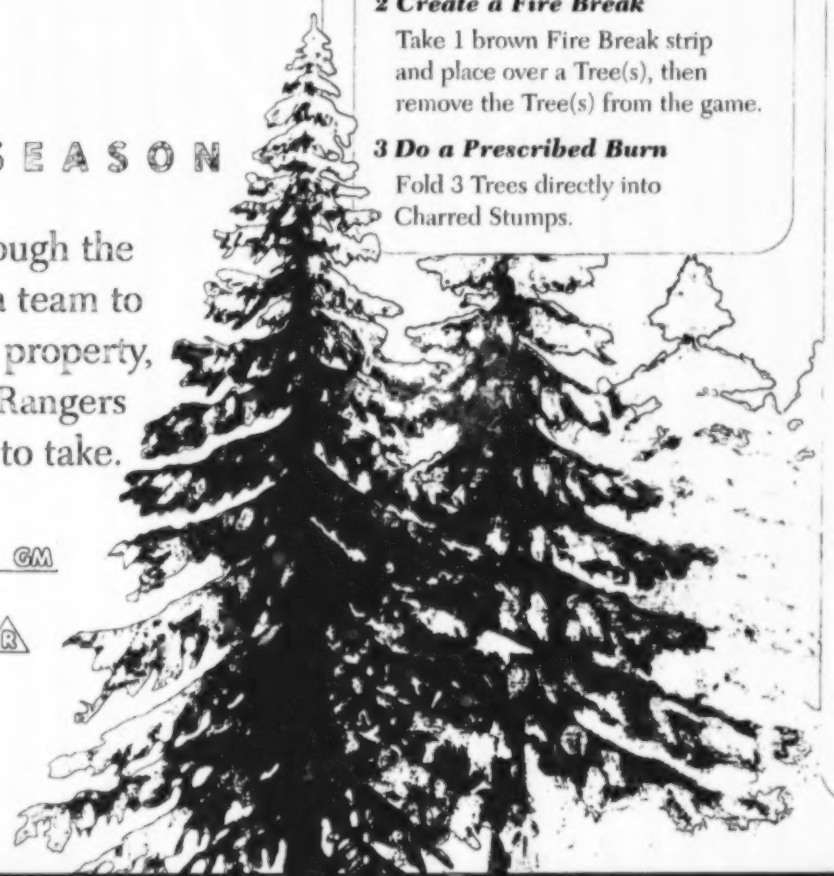
Now it's time to play the game.
The game is played in four rounds:

PREVENTION
WEATHER
MANAGEMENT
END OF FIRE SEASON

The GM guides Rangers through the game. The Rangers work as a team to balance the needs of people, property, and the health of the forest. Rangers must agree on which actions to take.

steps done by Game Master GM

steps done by Rangers R



PREVENTION ROUND

Before the fire season starts, the Rangers take the following landscape management steps to try to prevent the spread of fire. *This round is only done once.*

Directions for Rangers R

1 Pick a team name

Write it on the Score Chart.

2 Create a Fire Break

Take 1 brown Fire Break strip and place over a Tree(s), then remove the Tree(s) from the game.

3 Do a Prescribed Burn

Fold 3 Trees directly into Charred Stumps.

WEATHER ROUND

During the Weather Rounds, Rangers have to respond to fires started by people and lightning, the wind changing directions, and fire endangering property. After the first Weather Round, Rangers will also have to deal with fires left over from earlier rounds. *Weather and Management Rounds are repeated until all Fire Starters are used.*

Directions

1 Fire Starter GM

Take the top Fire Starter, without looking at its number, and place it number-side down on any Tree.

2 Wind Direction R

The youngest Ranger holds the Wind Arrow high in the air and drops it over the landscape. No matter where it lands, move it to the middle of the Lake, and point it in the same direction that it fell. The next youngest Ranger drops the Wind Arrow in each of the following rounds.

3 Spread New Fire R

Turn over the Fire Starter. Burn the number of Trees, Houses, or Campsites that match the burn rate (2, 3, 4, 5) on the Fire Starter. You burn an object by turning it to its flaming side. Make sure to burn in the direction of the wind, starting

with the Tree under the Fire Starter. If a fire burns a Campsite, remove that Campsite from the landscape. Place the Fire Starter beside the landscape.

4 *Spread Old Fire*

SKIP THIS STEP DURING THE 1st WEATHER ROUND ONLY! If there is a fire left over from a past round, stand the burning gamepiece on its edge (like an open book). Burn the number of Trees, Houses, or Campsites according to the current wind direction and burn rate on the Fire Starter. Then fold the standing card to its charred side and lay it down because the fire has moved on. Do this step for each standing gamepiece.

5 *Campsite*

Turn over 1 Campsite at the end of the Weather Round. If it is the Careful Campsite play continues. If it is the Careless Campsite, start a new fire that burns according to the burn rate and wind direction. Remove the Careless Campsite from the landscape.

6 *When you have completed the steps above*

Now, go to the Management Round.

MANAGEMENT ROUND

Now that the fires are going, Rangers need to decide what to do about them.

Directions for Rangers

1 Decide which fires you will put out or leave burning. Of course, you should immediately put out fires that threaten homes or campsites. But, you may want to let fires that are in "safe" areas burn. This can reduce fuel buildup and the strain on limited resources. Remember, rivers, charred areas, ongoing fires, and the edge of the landscape (towel) are barriers that stop fire from spreading.

2 Rangers can choose any 3 actions from the list here. Each counts as 1 action. If Rangers are unsure about the results of an action, the GM makes the final decision.

3 Repeat the Weather and Management Rounds until all 4 Fire Starters are used.

Examples of 3 Actions

- Put Out Fire 3 times
- Fly the Airplane, Dig Fire Break, and Rebuild House
- Fly the Airplane 3 times
- Rebuild 2 Houses and Put Out Fire

Actions

Put Out Fire
Fold 1 Burning Tree or House into a Charred Stump or Charred House

Dig Fire Break
Lay a brown Fire Break strip over one, two, or three unburned Trees. Then, remove the Tree(s) from the landscape leaving the brown strip. Once you run out of strips you can't place any more fire breaks.

Fly the Airplane
Fly the plane over the landscape and drop the chemical suppressant on a fire(s). GM decides what part of the fire(s) you put out, if any, by determining which fire(s) the plane actually flew over. Turn every Burning Tree or Burning House you fly over to its charred (burnt) side. If the plane crashes in the landscape, it counts as 1 action and you do not get credit for putting out a fire. You can practice flying the plane, but not over the landscape.

Rebuild House
Fold a Charred House back into an unburned House.

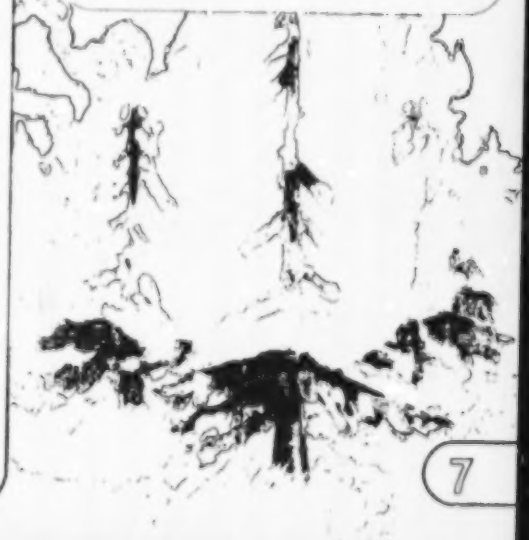
END OF FIRE SEASON ROUND

It's the end of the fire season but fires may still be burning. Rangers can (1) continue playing game until all fires are out or (2) let some fires burn themselves out by reaching the edge of the landscape, rivers, or charred areas. Either way, follow the directions below.

Directions for Rangers

1 Use the last Fire Starter on the discard pile to set the burn rate for the rest of the game.

2 Now, do the Weather Round, following step 2 (Wind Direction) and then step 4 (Spread Old Fire) only. Go on to the Management Round. Repeat until all fires are out. Then, go to scoring.



SCORING

Scoring is based on how well the Rangers managed the forest landscape. The higher their score, the better. The team gets points for:

- protecting homes and campsites from fire
- eliminating fuel buildup and supporting regrowth by allowing "safe" fires to burn
- learning about wildfire ecology

During steps 3 and 4 on this page, use the Questions and Answers sheet at the end of this book to check the Rangers' answers. You may give hints. Here's how the team finds its score.

Directions

1 Use the Score Charts provided at the end of this book. (You may make extra score charts on a separate piece of paper, if needed.)

2 Fold all the Charred Stumps or Charred Houses to the Regrowth side of the gamepiece.

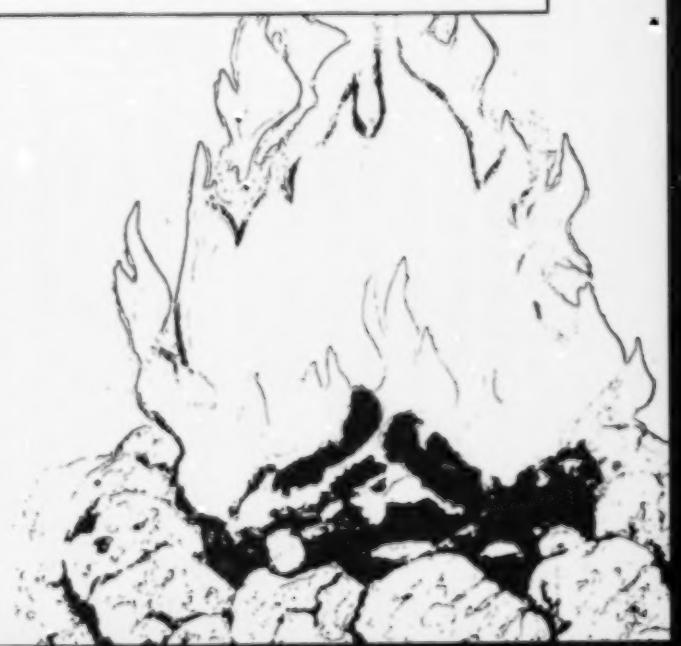
- Count each Regrowth as 1 point.
- Count Careful Campsites as 3 points each.
- Count all unburned Houses as 5 points each.

3 Gather all the Regrowth gamepieces. They have questions and answers on the bottom. Sort them into questions and answers. Match Question 1 with Answer 1, etc. Read them aloud to the team. Count all matches as 2 points each.

4 If you have a question or answer without a match, discuss it with your team and come up with your own answer or question. The GM will check your guess against the Questions and Answers sheet. Count all Guesses that match as 4 points each.

Team Name: *Fiery Foursome*

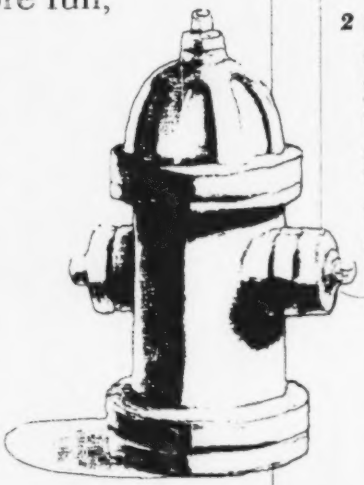
Item	Point Value		Your Score	Total
Regrowth	1	x	17	17
Careful Campsite	3	x	1	3
House	5	x	3	15
Questions & Answers	2	x	4	8
Guesses	4	x	3	12
Total			→	55



ACTIVITY

CREATE A FIRE SAFETY COMMERCIAL

A commercial is a message to convince someone to do something or buy something. You see and hear commercials every day on TV, the radio, the Internet, and in magazines. Some are funny, some are annoying, and some are educational. Think about which ones you like. What do you like about them? Make your own commercial to promote awareness of fire safety by creating a fun, entertaining skit and presenting it to your family and friends. For even more fun, get a friend to help.



WHAT YOU NEED

notebook
pencil or pen
props (whatever you want to use)

MAKING THE COMMERCIAL

The most important thing about your commercial is for your audience to remember your message!

1 What do you want your audience to know about fire safety? That's your message. Here are some examples: Smoke detectors can protect your family from fire. Become a firefighter. Have a fire escape route. Pick one of these messages or make up your own. Write your message in your notebook.

2 Look around your house for anything that might be useful in your commercial. Write it in your notebook. Look for things that are safety items as well as fire hazards. You can decide later how you want to use them. You might like to draw pictures of the items.

3 Now think about how the items on your list relate to your message. Jot down your ideas. Talk to other people about their experiences with fire. Perhaps someone has an interesting story you can add to your skit. Write a short skit (1–5 minutes) for your commercial.

4 You might want some music for your performance. Use a CD or tape player.

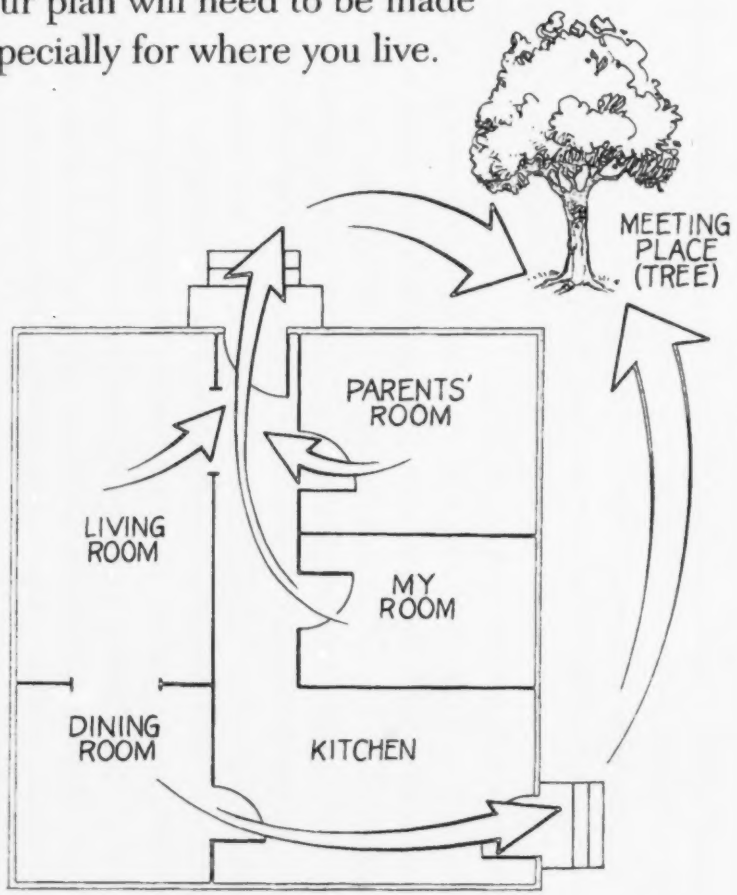
5 Make a stage area, maybe a space between two chairs with a wall behind you. You can use a lamp to light your stage. Set out your props.

6 Practice your skit and then perform it for your family and friends.

ACTIVITY

MAKE A FIRE ESCAPE PLAN

You can make a fire escape plan for your home. Everyone's home is different so your plan will need to be made especially for where you live.



DESIGN AN ESCAPE ROUTE

1 Make a floor plan showing all the rooms, windows, and doors.

2 Pick a main door out of each room. Choose a second door or a window to use, in case the main way is blocked by fire. Mark each escape route on your floor plan.

3 Make sure doors and windows are easy to open. Windows or doors with security locks need to have some type of quick-release that everyone can work.

4 Agree with your family on a place to meet outside. Remember that each person might be escaping from a different place.

5 Write the meeting place on the edge of the floor plan. Wait for every family member and the fire department in the meeting place.

6 After you get out of your home, call the fire department from the nearest phone.

7 Don't go back in your house even if people are trapped inside. Firefighters have the best chance of rescuing them.

8 Practice your plan.

What to Do in a Fire

- Stay calm.
- If you can't avoid smoke, crawl as low as you can under it.
- If your clothes are on fire, roll over and over on the floor.
- Wake all the members of your family if you can.
- Make your way out together through the nearest exit.
- Don't open any doors other than the ones you need to escape through.
- If a door feels hot, don't open it. There is a fire on the other side!
- If you can't escape through the doors, get the family into the room that has the best window to drop from.
- Children should go down first. Never leave children until last.
- Remember: Never jump! Lower yourself to arm's length and then drop.
- If you are trapped in a room by smoke or fire, you need to try to stop smoke getting into the room. Close the door and block gaps into the room with towels or spare clothes.
- If there is no telephone, go to the window and shout for help. If your windows can't be opened, use a heavy object and hit the window in a bottom corner. Make any jagged edges safe with a towel or blanket.
- Once you know you have been heard and help is on the way, stay near to the floor by the window. Smoke and heat rise so you are safer near the ground.
- If you live in an apartment building, don't use the elevator because it might get stuck. Use stairways to escape. Some big buildings have escape plans that ask you to stay where you are and wait for help. Your building manager will know the plan.

SOURCES

FOR CHILDREN

Books

Younger Children

Biesty, Stephen
Stephen Biesty's Incredible Pop-Up Cross-Sections
London: Dorling Kindersley Limited, 1995. Biesty provides oversized pop-up art of a fire truck, rescue helicopter, and space shuttle.

Fortney, Mary T.
Fire Station Number 4: The Daily Life of Firefighters
Minneapolis: Carolrhoda Books, Inc., 1998. Describes the everyday activities of firefighters in a California fire station.

Gibbons, Gail
Fire! Fire!
New York: HarperCollins Publishers, 1984. Cartoon-like illustrations and detailed text explains how firefighters combat fires in urban and rural areas.

Greenberg, Keith Elliot
Smokejumper: Firefighter from the Sky
Woodbridge, CT: Blackbirch Press, Inc., 1995. Text and color photographs portray smokejumper Wayne Williams's training, daily routine, and mishaps as a smokejumper.

Masoff, Joy
Fire!
New York: Scholastic Reference, 1998. This nonfiction reference includes the sections: "Why Fires Burn," "Tools of the Trade," "On the Job," "Firefighting Past and Future," and "You Can Fight Fires...Now!"

Sipiera, Paul P., and Diane M. Sipiera
Wildfires
New York: Children's Press, 1998. Presents the causes of wildfires, ways to control them, and their damaging as well as beneficial effects. This book features larger text, color photographs, a glossary of terms, and a resource list.

Older Children

Cone, Patrick
Wildfire
Minneapolis: Carolrhoda Books, Inc., 1997. Briefly traces the history of wildfire, then explores the progression of fire, different types of wildfire, and factors that influence the way wildfire behaves.

Crew, Linda
Fire on the Wind
New York: Delacorte Press, 1995. This novel follows the lives of a logging family in 1933 as a forest fire rages throughout northwestern Oregon.

Patent, Dorothy Hinshaw
Fire: Friend or Foe
New York: Clarion Books, 1998. Explores the effects that forest fires have on both people and the natural world.

Straub, Frank
Yellowstone's Cycle of Fire
Minneapolis: Carolrhoda Books, Inc., 1993. Describes the forest fires in Yellowstone National Park during the summer of 1988 and the ensuing renewal of the land.

Articles

Dunn, Jerry Camarilla, Jr.
"Fire"
World (August 1997): 4–8.
Describes the environmental benefits of wildfires.

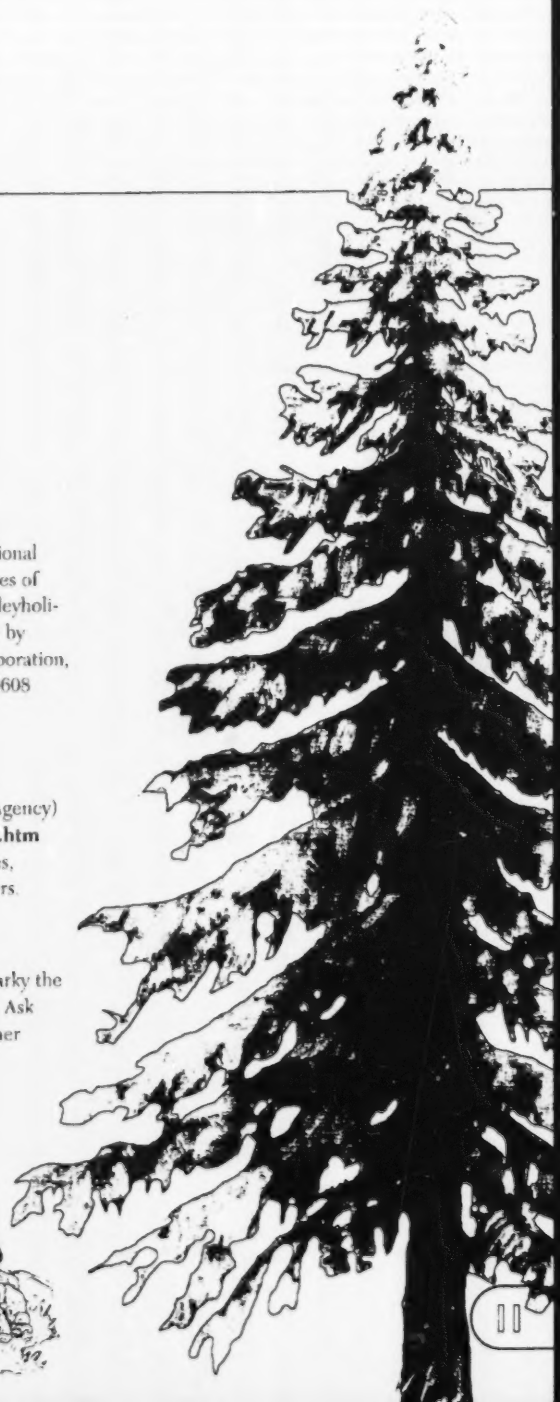
Videos

Finley-Holiday Film Corporation
Yellowstone Aflame: The Great Yellowstone Fires of 1988, 1989
Film footage shows Yellowstone National Park before, during, and after the fires of 1988. Order online at http://www.finleyholiday.com/NationalParkVideos.html or by contacting Finley-Holiday Film Corporation, P.O. Box 619, Whittier, California 90608

Online Resources

FEMA for Kids
(Federal Emergency Management Agency)
http://www.fema.gov/kids/wldfire.htm
Online activities about fire, tornadoes, hurricanes, and other natural disasters.

Sparky the Fire Dog
http://www.nfpa.org/sparky/
This award-winning site features Sparky the Fire Dog and offers a firetruck tour, Ask Sparky, a fire drill challenge, and other games and family activities.



FOR ADULTS

Books

Dilsaver, Larry, and William Tweed
Challenge of the Big Trees: A Resource History of Sequoia and Kings Canyon National Park Service
Tucson, AZ: University of Arizona Press, 1991. This book describes fire in the giant sequoias.

Leschak, Peter M.
Hellroaring: The Life and Times of a Fire Bum
Minnesota: North Star Press of St. Cloud, Inc., 1996. Chronicles Leschak's adventures as a forest firefighter.

Maclean, John N.
Fire on the Mountain
New York: William Morrow and Co., 1999. Recounts the story of the fire disaster at Storm King Mountain, 1994, where 14 firefighters died.

Maclean, Norman
Young Men and Fire
Chicago, IL: University of Chicago Press, 1993. The story of the wildfire at Mann Gulch, 1949. (A classic in the field.)

Pyne, Stephen J.
Fire in America: A Cultural History of Wildland and Rural Fire
Seattle, WA: University of Washington Press, 1997. History of fire in North America.

Pyne, Stephen J.
Fire on the Rim: A Firefighter's Season at the Grand Canyon
Seattle, WA: University of Washington Press, 1995. Memoir of Pyne's firefighting days.

Sholly, Dan R. and Steven M. Newman
Guardians of Yellowstone: An Intimate Look at the Challenges of Protecting America's Foremost Wilderness Park
New York: William Morrow and Co., 1991. Chief Ranger Dan Sholly describes the fight to protect the land and people of Yellowstone National Park during the forest fires of 1988.

Articles

Jeffrey, David
"Yellowstone: The Great Fires of 1988."
National Geographic (February 1989): 255–273.

Lorch, Donatella
"Fighting Fire with More Fire."
Newsweek (September 11, 2000): 60.

Videos

National Smokejumper Association
Smokejumpers: Firefighters from the Sky
Produced in 2000. The 60-year history of men and women firefighters who parachute from airplanes to fight remote wilderness fires. Available online at http://smokejumpers.com/merchandise/index.html

Online Resources

Firewise for Educators
(National Wildlife/Urban Interface Fire Protection Program)
http://www.firewise.org/www/educate_win.htm
Site includes educational curricula and a list of useful Web sites.

Frostfire
http://www.fsl.orst.edu/fera/frostfire.html
This site offers photographs and research data from a prescribed burn in the boreal forest of interior Alaska.

National Interagency Fire Center
http://www.nifc.gov/
This agency is the national coordinating house for large fires across the nation. The site provides current wildfire information, fire maps, and an online photo gallery. In the summer they post daily updates about wildfires across the country.

NOVA Online—Fire Wars
http://www.pbs.org/nova/fire
This site provides program-related articles, interviews, interactive activities, and other resources.

Tall Timbers Research Station
http://www.talltimbers.org/
Tall Timbers conducts research that promotes natural diversity and management actions that mimic nature. The site includes a thesaurus and database about wildfire issues and includes color photographs.

Yellowstone Fires and Their Legacy
http://www.idahonews.com/yellowst/yelofire.htm
Compiled by the Idaho News, this site features a 10-chapter article described as "the only online comprehensive guide to the Yellowstone fires of 1988."

Organizations

National Park Service
1849 C Street NW
Washington, DC 20240
(202) 208-6843
http://www.nps.gov/ Site includes features about the history, culture, nature, and science in all the U.S. national parks.

USDA Forest Service
Fire & Aviation Management
3833 S. Development Avenue
Boise, ID 83705
(208) 387-5100
http://www.fs.fed.us/fire/fire_new/ This site contains sections about fire management, use, science, prevention and education. It also provides links to a list of wildfire Web sites.

United States Fire Administration
16825 South Seton Avenue
Emmitsburg, MD 21727
(301) 447-1000
Fax (301) 447-1052
http://www.usfa.fema.gov/ An official Web site of the Federal Emergency Management Agency, this site promotes the USFA's mission to reduce life and economic losses due to fire and related emergencies, through leadership, advocacy, coordination, and support.

Order *Fire Wars*

To order the *Fire Wars* program on videocassette for $19.95, call 1-800-949-8670. (The video will ship in May 2002)

SCORE CHART

Keep a record of your fire seasons. You may make extra score charts on a separate piece of paper, if needed.

Team Name:

Item	Point Value		Your Score	Total
Regrowth	*1*	×		
Careful Campsite	*3*	×		
House	*5*	×		
Questions & Answers	*2*	×		
Guesses	*4*	×		
Total ····· →				

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A. Animals generally escape wildfires, except perhaps nestlings.

2

Q. What kinds of places might never have a wildfire?

A. Very wet tropical rainforests, barren deserts, and ice fields never catch fire.

3

Q. How do you think a drought would affect wildfires?

A. Drought makes fuels burn more easily.

4

Q. What can you look at in a forest to learn its fire history?

A. Burn scars on trees and house foundations show fire history.

5

Q. What is a firebrand?

A. A firebrand is anything that burns that is carried on the wind and starts a new fire.

6

Q. What 3 elements are needed for fire?

A. Fuel + Oxygen + Heat = Fire

7

Q. How can fire help a giant sequoia grow?

A. Fire eliminates competition from other plants, allows sunlight in, and furnishes nutrients.

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Q. Do fires kill the roots of all trees?

A. No, some trees sprout from their roots after a fire.

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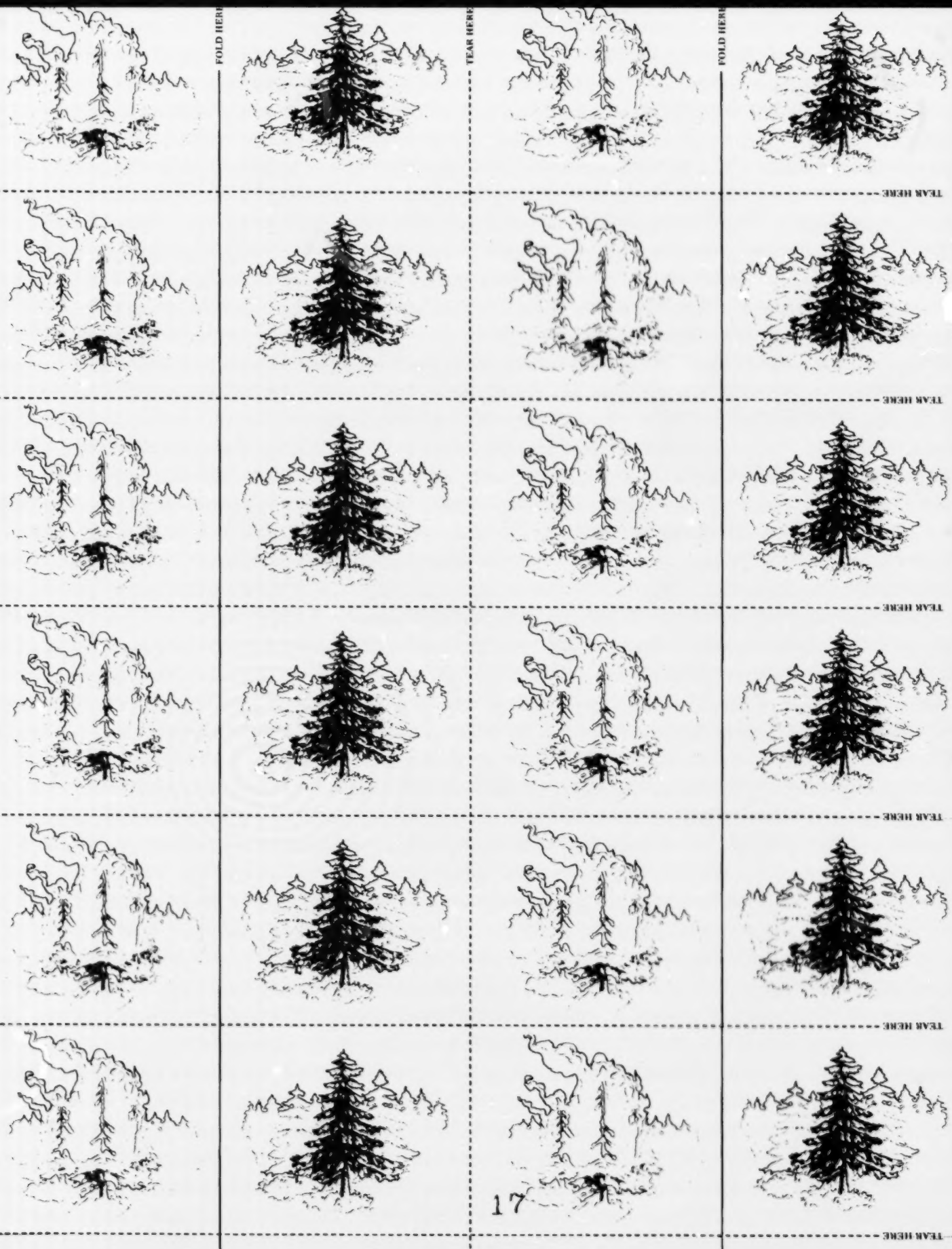
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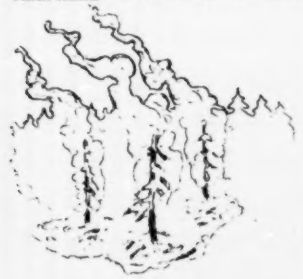

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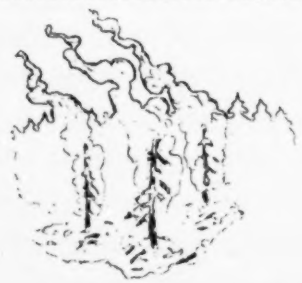

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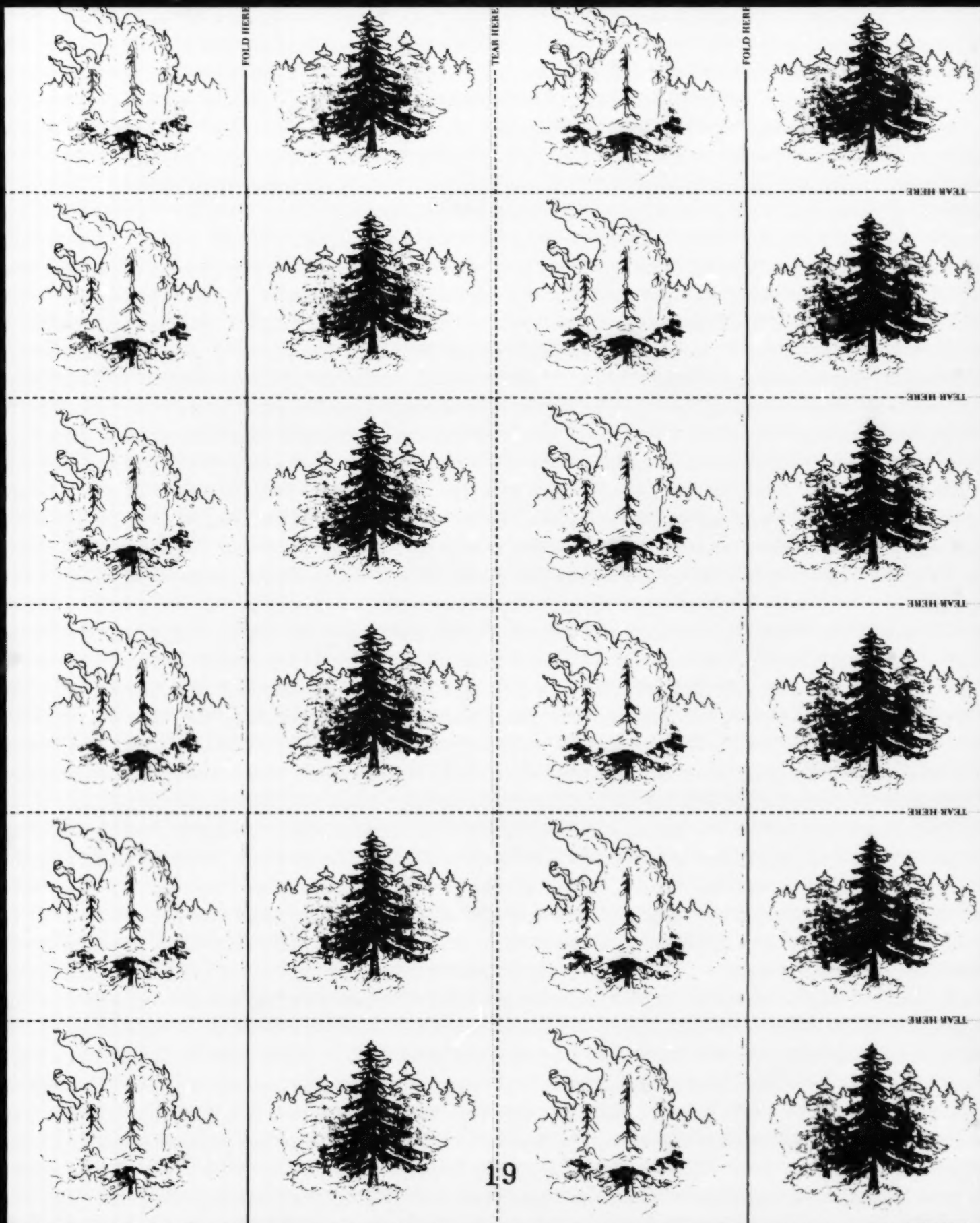
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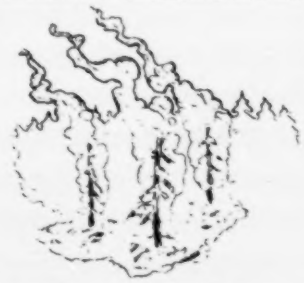

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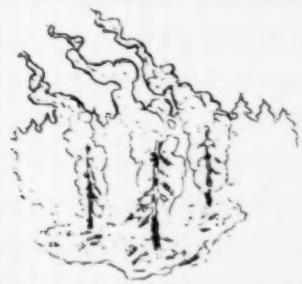

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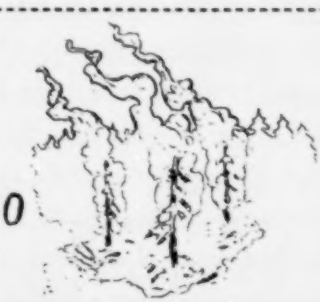

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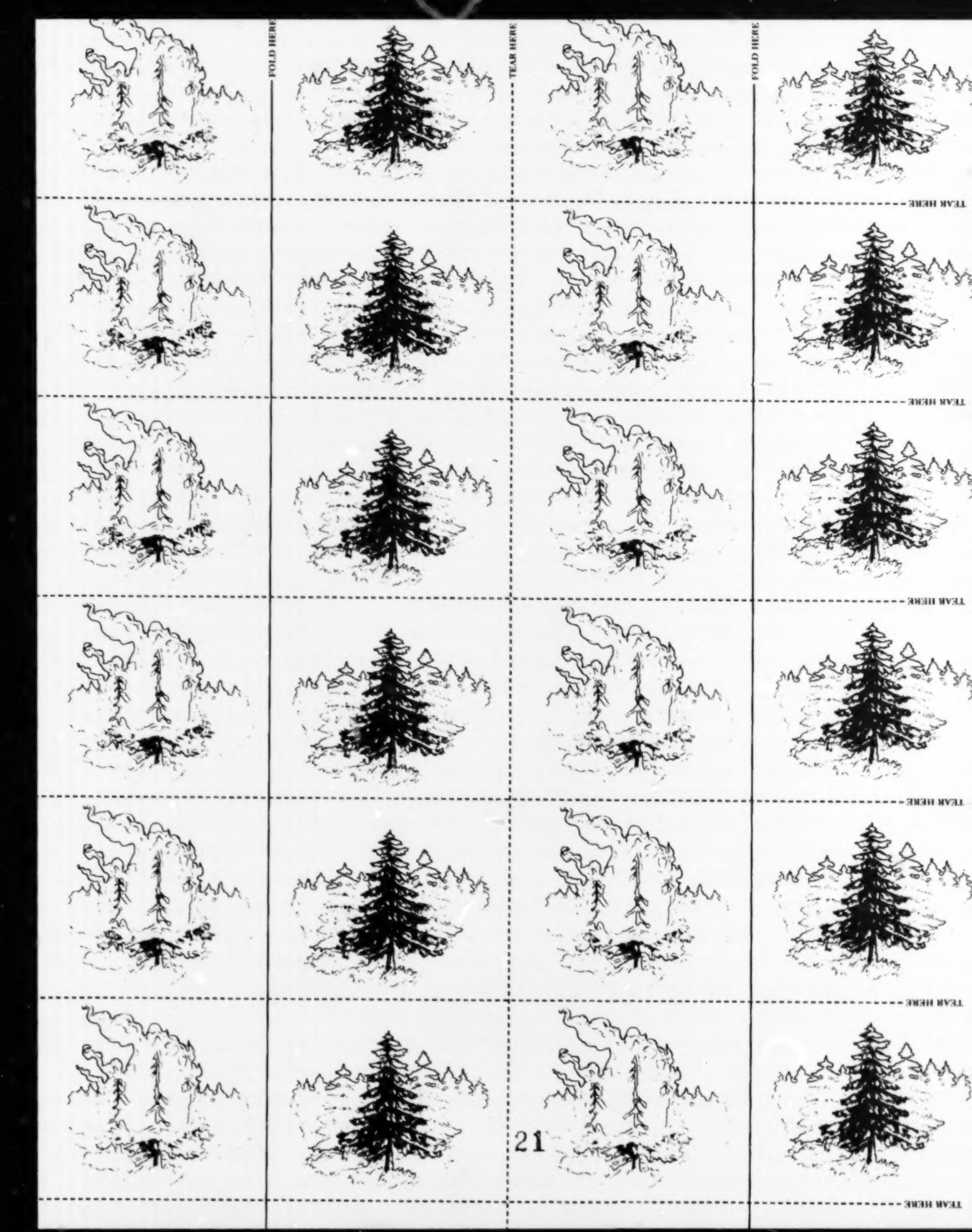
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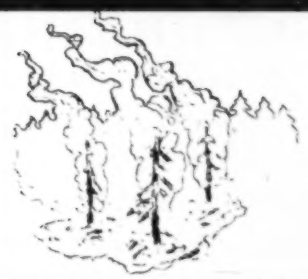

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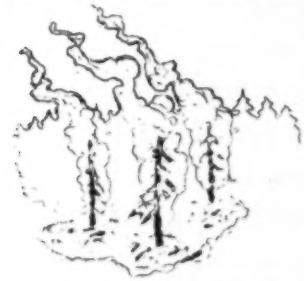

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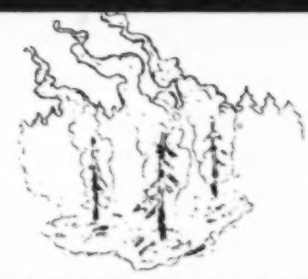

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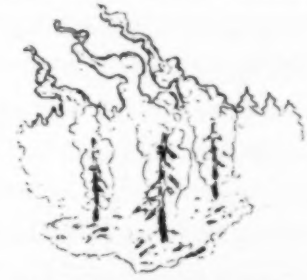

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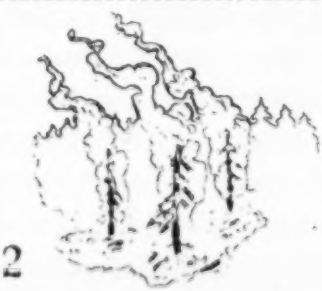

15

A. Depending on the area, 70 to 95% of wildfires are caused by people.

Wind Direction
Gently remove arrow along perforated line.
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Q. What part of a house most easily catches fire from firebrands?

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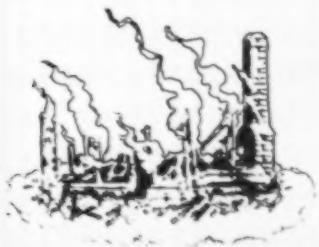
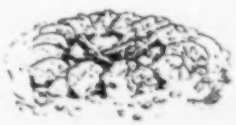


19

A. Roofs, especially shingled ones, burn easily from firebrands.



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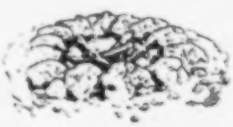
Q. What do you call an area with houses and forests?



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A. Wildland/Urban interface is where houses and forests exist together.

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Q. What happens to a house that is burnt but not rebuilt?

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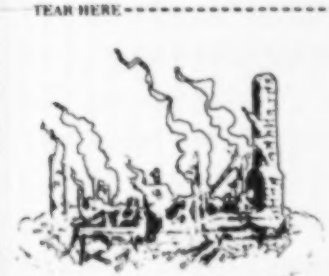

21

A. After a fire, the forest grows through an old foundation.

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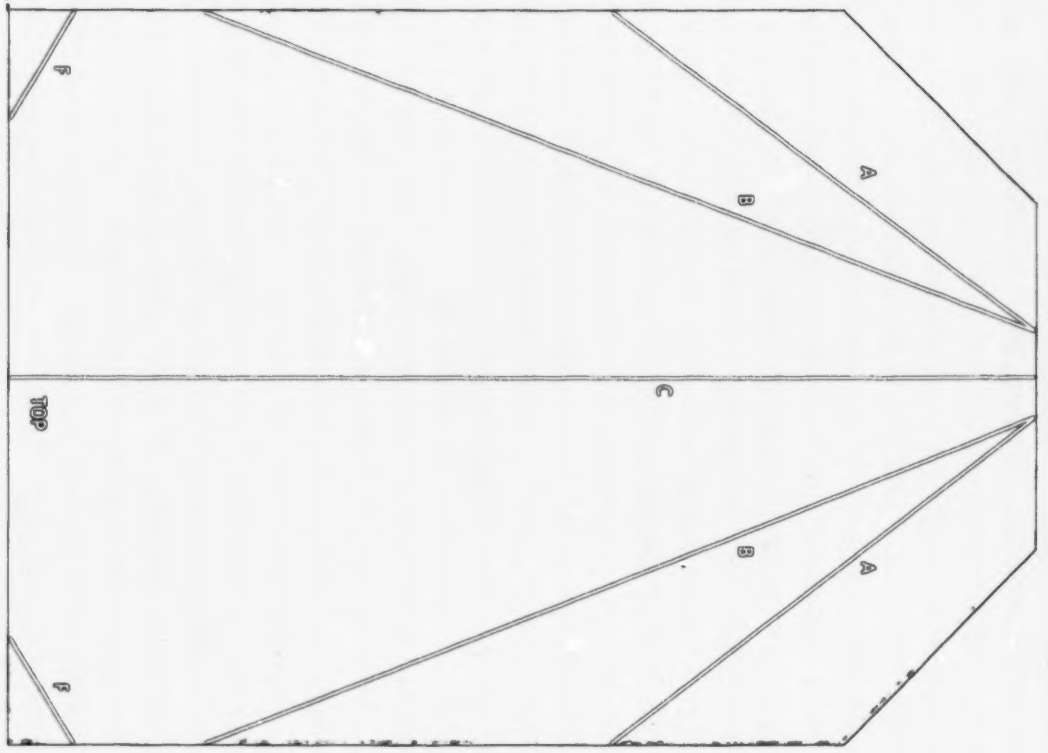
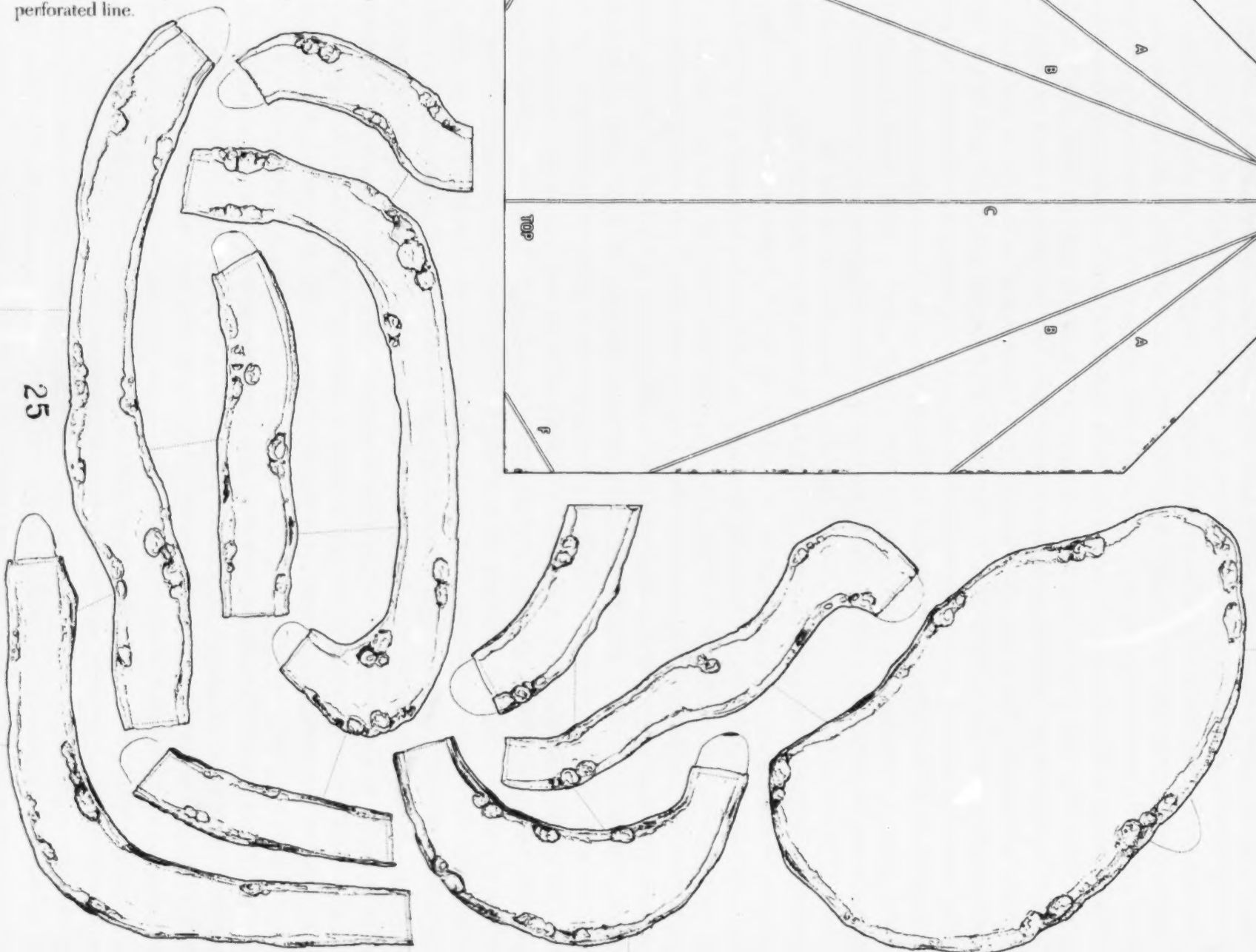
Wind Direction

Directions for Removing Rivers/Fire Breaks:

1 Press down on the hole/tab beside each piece.
2 Carefully and slowly tear out each piece along the perforated line.





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***Fire Wars* Senior Producer**
Judith Vecchione

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